DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
CBER/OCBQ/DMPQ/LAC
HFM-673
1401 Rockville Pike
Rockville, MD 20852

Date: June 25, 1999

From: Joan C. May, Ph.D., Chief, LAC, DMPQ HFM-673
Alfred V. Del Grosso, Ph.D.
Laura Swartz, Ph.D.
Joseph J. Progar

Subject: Chemical Test Results for Michigan Department of Public Health, Anthrax Vaccine Adsorbed, Lots FAV020 and FAV030

To: Neil Goldman, Ph.D. HFM-20

Aluminum was measured by flame atomic absorption spectrophotometry on June 17, 1999. CBER's results are as follows:

Lot #	mg Al/mL
FAV020	1.30
FAV030	1.33

The limit for aluminum as stated in Title 21, Sec. 610.15 of the Code of Federal Regulations is no more than 0.85 mg of aluminum in the recommended individual dose when determined by assay or no more than 1.14 mg of aluminum by calculation on the basis of the amount of aluminum added. The dose for this product is 0.5 mL. The above lots meet this requirement.

BioPort Corporation has set limits of 0.8-1.5 mg/mL of aluminum (0.4-0.75 mg/0.5mL dose). The above lots meet this requirement.

Formaldehyde concentration was measured by colorimetry (Hantzsch method) on June 17, 1999. CBER's results are as follows:

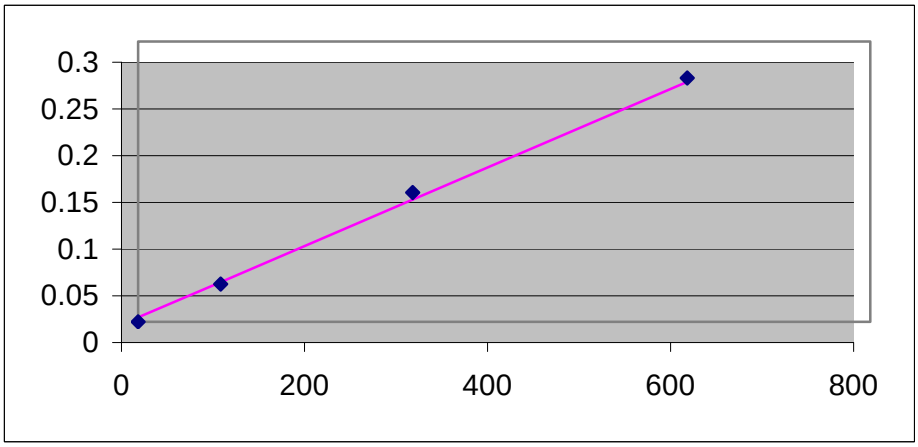
Lot #	Percent Formaldehyde
FAV020	0.009
FAV030	0.009

CBER's requirement specifies that the free formaldehyde in the finished product be less than 0.02 percent free formaldehyde (200 ug formaldehyde per mL). The above lots meet this requirement.

BioPort Corporation has set a limit of less than 0.02 percent formaldehyde for this product. The above lots meet this requirement.

Squalene GC 6/24/99 File:Sq06249A

ppb Sq.	ISTD	Squalene	Squalene/ISTD	
0	2329	0	0	0.004747641
90	2066	84	0.040658	0.042576056
300	2672	370	0.138473	0.130842357
600	1915	500	0.261097	0.256937072
900	1720	650	0.377907	



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9993463
R Square	0.99869302
Adjusted R Square	0.99825736
Standard Error	0.00653225
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.097816045	0.097816	2292.368	2.00615E-05
Residual	3	0.000128011	4.27E-05		
Total	4	0.097944055			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0.00474764	0.004421048	1.073872	0.36157	-0.009322119	0.0188174
X Variable 1	0.00042032	8.77877E-06	47.87868	2.01E-05	0.000392378	0.00044825

MDPH	ISTD		Squalene	Squalene/ISTD	ppb Squalene Prep.
FAV020		4488	244	0.054367	118.1
		4632	231	0.04987	107.4
					112.7

MDPH	ISTD		Squalene	Squalene/ISTD	ppb Squalene Prep.
FAV030		3780	163	0.043122	91.3
		3386	175	0.051683	111.7
					101.5

MDPH	ISTD		Squalene	Squalene/ISTD	ppb Squalene Prep.
FAV038		2860	304	0.106294	241.6
		2284	299	0.130911	300.2
					270.9

MDPH	ISTD		Squalene	Squalene/ISTD	ppb Squalene Prep.
FAV043		3160	557	0.176266	408.1
		3631	614	0.169099	391.0
					399.5

MDPH	ISTD		Squalene	Squalene/ISTD	ppb Squalene Prep.
FAV047		3187	1043	0.327267	767.3
		4560	1728	0.378947	890.3
					828.8

Lower 95.0%
-0.0093221
0.00039238

Sample

11.3

Sample

10.1

Sample

27.1

Sample

40.0

Sample

82.9

Benzethonium chloride, an antimicrobial preservative, was measured using an adaptation of the colorimetric titration procedure originally specified by Michigan Department of Public Health and currently used by BioPort Corporation for this product. CBER testing was performed on June 25, 1999. Results for the two subject lots along with results obtained from three other lots of anthrax vaccine are as follows:

Lot #	Percent Benzethonium Chloride
FAV020	0.0020
FAV030	0.0015
FAV008-2	0.0017
FAV031-1	0.0019
FAV038	0.0020

Limits for benzethonium chloride content of this product were specified by Michigan Department of Public Health as 0.0015 – 0.0030 %. The above lots meet this requirement.

Squalene was determined by gas chromatography with flame ionization detection following solvent extraction and concentration. Verification of the characteristic mass spectrometric fragmentation pattern obtained from the chromatographic peak was used as part of the validation of the analytical procedure. Three other lots of anthrax vaccine were tested for comparative purposes. CBER testing was performed on 6/23 and 6/24/99. Results are as follows:

Lot #	ppb (parts-per-billion) Squalene
FAV020	11
FAV030	10
FAV038	27
FAV043	40
FAV047	83

Squalene content of the subject lots was determined to be in the level of low parts-per-billion and was comparable to levels determined in other lots of anthrax vaccine and in the other bacterial vaccines that were tested.